National Emergency Alert System (EAS) Test Discussion: Alaska & Virgin Islands Findings

6 April 2011

FEMA

Discussion Topics

- We hope that in today's discussion, you will have a better understanding of the:
  - Emergency Alert System (EAS)
  - Purpose and Importance of Testing the EAS on a National Scale
  - Major EAS Test Activities and Accomplishments To-Date
  - Alaska EAS Test and Virgin Islands EAS-CAP demonstrations
    - Outreach and Lessons Learned
    - Technical and Operational Observations
    - Identified Mitigation Strategies
    - Qualitative and Quantitative Test and Demonstration Reviews
  - Next Steps and Participation

About the EAS

- The EAS is the backbone of alert and warning. It reaches more people in more places from a single alert origination.
- The EAS was established in 1994 as a replacement for the EBS. The FCC began enforcing EAS rules in 1997.
- It is extremely valuable in rural communities and especially important in post-disaster situations. Due to its resiliency, the EAS is expected to operate when other communication pathways are inoperable.
- The system must be in a state of readiness at all times. NOAA NWR, Territorial, State, and local governments use the EAS regularly, however the President has never activated the national-level EAS, nor has there ever been a nationwide Test.
- The EAS Test will also exercise the pathways used by NOAA, Territorial, State and local governments.
- It is important to remember that the Common Alerting Protocol (CAP) does not replace the EAS. EAS message will be transported over IP by CAP.

Purpose of the EAS Test

- Assess the readiness and effectiveness of the EAS from origination to reception by the public.
- Assess real-world EAS distribution networks and monitoring assignments, transmission issues, FCC rules, equipment interoperability and functionality.
- Establish a comprehensive baseline for more effective preparation and execution of future tests (both traditional EAS and EAS-CAP).
- Establish effective mitigation approaches to improve the EAS.
- Implement and assess EAS participant, industry, State and local government, non-profit organizations, and public outreach and engagement activities.

It is important to note that the first EAS Test will not incorporate testing of CAP capabilities

Major EAS Test Activities and Accomplishments

- Drafted the EAS National-Level Test and Assessment Plan to provide guidance during the execution of the Tests. The Plan includes extensive outreach components.
- Updated and continue to improve EAN origination procedures. These procedures are being tested between FEMA and the Joint Interoperability Test Command (JITC).
- Conducted two EAS tests using an EAN (2010 and 2011); Conducted an EAS Workshop at the Alaska Broadcasters Association Annual Conference, November 2010.
- Conducted EAS Participant outreach in Alaska and the Virgin Islands. Important organizations and local government, including the ADHS, KFQD, the ABA, VITEMA, V.I. Office of the Governor, were engaged. Alaska EAS Participants were enthusiastic in their support of the first and second Alaska EAS Test and a future national test.
- Conducted public outreach in Alaska and the Virgin Islands. State of Alaska released timely PSAs. Responded to media requests; conducted interviews, assisted in the drafting of news releases.
- Disseminated EAS Equipment Preparation Instructions; worked with participants to ensure proper setup of EAS devices.

Major EAS Test Activities and Accomplishments

- More EAS Participant stations transmitted the EAN to more people compared to the previous Alaska Test.
- FEMA origination personnel followed an updated template and script, resulting in the correct ORG Code used for EAN origination.
- Established a strong baseline for more effective preparation and execution of an end-to-end national test.
- EAN audio quality and amplitude were improved. However, audio message quality needs further improvement.
- Increased cooperation and partnership between the State, EAS Participants, manufacturers.
- More robust pre-Test exercises and dry-runs better informed EAS Participants.
- Conducted EAS outreach and mini-workshops to EAS Participants at the Michigan Association of Broadcasters (MAB).

Alaska EAS Test Outreach and Messaging

- Notice to EAS Participants from ABA announcing the Alaska EAS Test.
- ABA, State of Alaska, and FEMA coordination of a Public Service Announcement (PSA) over local television, cable, and radio, featuring Senator Lisa Murkowski.
- FEMA press release announcing the Alaska EAS Test.
- “Chill It’s Just a Drill” EAS Participant slides on cable and local television.
- Joint media interviews with ADHS and FEMA officials before and after the Test.
- FEMA post-test press release and announcement.

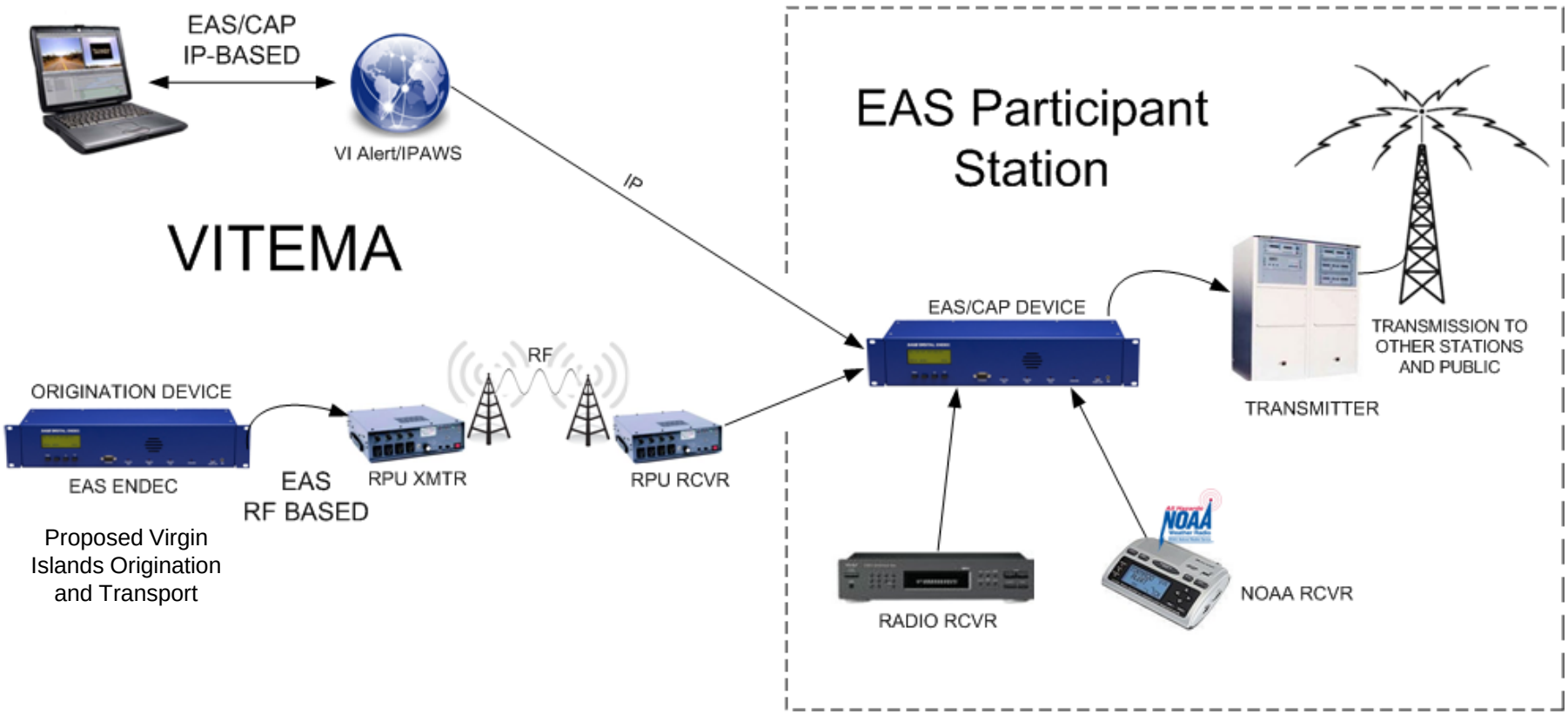
Alaska EAS Test Outreach and Messaging- Public Service Announcement

– The PSA Script was in close coordination with the Alaska Broadcasters Association (ABA) and FEMA IPAWS. ABA was essential in generating the support of Senator Lisa Murkowski for the announcement, as well as the full-scale production of the PSA.

V.I. EAS-CAP Demonstration with EAS Live-Code Alert

- On Wednesday March 23, the Virgin Islands (VI) joined other localities in the Caribbean as a participant in a tsunami response exercise designed to evaluate local response plans, alerting, increase preparedness, and improve coordination throughout the region.
- The exercise, titled CARIBE WAVE 11/LANTEX 11, simulated a widespread tsunami warning throughout the Caribbean which required implementation of local tsunami response plans and public notification through the Emergency Alert System (EAS).
- The exercise simulated a major earthquake and tsunami generated within the VI and PR coastal waters. At approximately 9:03 a.m. on March 23, NOAA and the territory's broadcasters tested the EAS using a live Tsunami Warning Code (TSW). The test determined the effectiveness and readiness of authorities and EAS Participants to warn the public in the event of a major disaster.
- The EAS portion of the Exercise lasted approximately two minutes. EAS Participants/broadcasters tuned to NOAA National Weather Radio to receive the EAS message for device activation at their stations.

Alerts and Warnings Using EAS and CAP to Radio, Television and Cable



Virgin Islands EAS-CAP Outreach and Messaging

FEMA IPAWS provide the V.I. with support to coordinate the following activities:

- A series of V.I. Territorial Emergency Management Agency (VITEMA) and Office of the Governor press releases announcing the date of the Demonstration as well as Tsunami Preparedness Week.
- Recurring Public Service Announcements (PSA) of Governor John P. de Jongh Jr. over local radio.
- Social media strategy and timely updates to the VITEMA website, Facebook, and Twitter accounts.
- Pre-Demo media interviews with VITEMA Director and Assistant Director.
- Flyers and news release information provided to V.I. Department of Tourism, Law Enforcement, First Responders, and Department of Education.
- 9-1-1 Call Center Scripts provided.
- Post-EAS-CAP Demonstration news releases and media interviews with VITEMA Assistant Director.

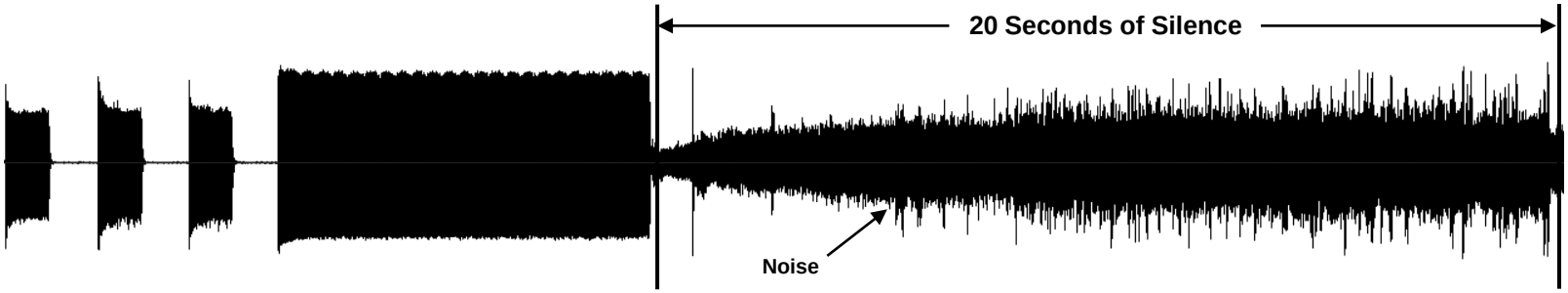
2010-2011 Alaska EAS Test Problems and Mitigation

- Summary of identified problems (2010 Test) and mitigation results:

– Incorrect ORG Code Used	Corrected
– Cable Head End did not Air the EAN	Corrected
– Origination Procedures	Corrected, Needs Improvement
– Monitoring Assignments	Needs Some Improvement
– Low Audio Quality & Amplitude	Improved – Needs More Improvement
– Text Crawl Inconsistencies	Future Rulemaking
– Use of Washington DC FIPS Code	Future Rulemaking
– Duplicate EAN Broadcasts	Improved – Future Rulemaking
– EAS Device Installation Training	Improved/Ongoing
– DTV & Sub channel EAS	Future/Ongoing

Issues and Mitigation – Federal Origination Procedures

- Significant “dead air” was observed between the EAN headers and the initial announcement cueing the announcer.



- FEMA will improve procedures from origination of the National message to delivery to PEP stations. Training and exercises at the Federal origination level will improve the timing and cueing of the messages, and eliminate dead-air.

- Improvements will include:

  - Pre-recording of EAN on-air announcement that is used for cueing the announcer.

  - A clear, professional quality, announcement making it clear that “This is a Test” will be used.

Issues and Mitigation – Audio Quality

- FEMA began steps to drastically improve the audio delivered to the PEP stations by way of a new PEP Satellite Network.
- The PEP Satellite Network will include all CONUS and OCONUS PEP stations, and will include:
  - Delivery of broadcast quality audio
  - Real-time telemetry from the PEP stations
  - Ability to deliver the EAN faster
- The PEP Satellite Network is in the test and early deployment stages.
- Best practices outreach and rulemaking may help mitigate audio problems between participants. For example, best practices can help reduce problems with reception by proper tuning of radio receivers, audio phasing, proper adjustment of levels, etc.

Issues and Mitigation – Monitoring Assignments

- Some EAS participants were unable to transmit the EAN when their single source failed to relay. In most cases other sources were available to the EAS participants.
- The ABA and State of Alaska, through the Alaska EAS Plan, have provided clear and concise information on EAS monitoring, however, it is possible that some confusion may have occurred regarding EAS monitoring.
- Monitoring more than one EAS source eliminates single points of failure. Robust EAS Participant outreach and engagement activities will help EAS participants understand the need to have redundancy in EAS monitoring.

Example of a Typical EAS Receiver

- In some cases, especially in remote locations, only one EAS source is available for monitoring. It is important for EAS participants to coordinate with State and local authorities so that any limitations are mitigated.

Issues and Mitigation – EAN Crawl

- Significant EAN text crawl inconsistencies were observed. These included differences in:
  - Speed
  - Duration
  - Colors
  - Size
  - Content
- A better understanding of video crawl mechanisms is necessary. FEMA and FCC will request feedback from industry to find solutions. FEMA is installing new crawl capabilities at the IPAWS Lab at JITC to support improved understanding and mitigation.
- EAS Rules need to be more specific on the use of the EAS crawl.

Issues and Mitigation – EAN Crawl

Samples of the EAS crawl airing the EAN in Alaska:

Issues and Mitigation – EAS Device Installation and Operation

- Many issues were due to installation, configuration, and operation of EAS devices:
  - Monitor source selection, redundancy, tuning and wiring
  - Text crawl generator programming, language settings speed, duration, color and size.
  - Background image selection and switching
  - Audio attenuation, impedance, and phasing
  - Programming of input and output audio switching
  - Inoperable equipment
- FEMA and the FCC are partnering to promote technical best practices in the operation and maintenance of EAS devices.

Issues and Mitigation – DTV, Satellite, Cable Operations

- Cable forced tuning issues were observed during the Test:
  - In 2010, the largest cable provider in Alaska was unable to air the EAN. This was due to an improper ORG Code being used in the EAN. This problem was mitigated in 2011.
  - During the 2011 EAS Test, forced tuning issues were observed. Some cable receivers were unable to keep the EAN on the air.
  - A major cable company reported that other head ends throughout the State were unable to air the EAN for a variety of reasons, including inter facility links not operating properly.
- Some TV participants did not air the EAN over their secondary channels. This may be due to video routing and switching or other configuration issues.
- FEMA is working with the cable industry to better understand how the EAS works within the cable television environment. In television (cable, terrestrial TV, satellite TV) it may be necessary to use additional equipment not mentioned in EAS Rules. The use of this external equipment impacts how the EAS is presented to the public.

Qualitative Test Summary

- The main reason why the EAN Test message was either not received or relayed was in large part due to individual and localized technical malfunctions (ex: distribution amplifier failures, a major EAS relay station did not relay the message due to a malfunctioning power supply, etc.).

- FEMA successfully transmitted a correct EAN to Alaska PEP Station, KFQD.

- EAS operational plans and procedures at the State-level should be closely followed by the EAS participants. Some EAS participants only monitor one source.

- Cooperation from EAS participants/broadcast community was excellent, in particular due to the support and cooperation of the ABA and ADHS. The ADHS and the ABA were able to recruit the support of Senators' Murkowski and Begich, and Congressman Young.
  - The support and partnership with the ABA and ADHS was critical
  - This approach will be used as a model for the end-to-end National EAS Test

- Active outreach prepared Alaskans for the second EAS Test , and did not result in any undue public concern. The future EAS Test must include appropriate Federal, Territorial, State and local public awareness campaigns.

Quantitative Test Summary

- Results show 81% of (96 of 119) EAS participants aired the EAN throughout Alaska in 2011.

- 81% of 21 LP-1s relayed the EAN. Four LP-1s did not for reasons below:
  - 2 monitored a major EAS relay station which suffered a power supply malfunction (corrected after the Test)
  - 1 experienced a distribution AMP failure (corrected after the EAS Test)
  - 1 failed to relay the EAN. Initial analysis questions an “auto-forward” setting

- The EAS participants in Alaska’s main population center, Anchorage, are not dependent on a satellite relay. Observations show that 94% of the monitored EAS participants in Anchorage aired the EAN.

- Five LP-1s monitoring a major EAS relay station experienced “locked” EAS devices. Station engineer switched audio back to regular programming before End of Message (EOM) headers were sent, resulting in the lock-up. Corrective actions were immediately taken by Test Controllers to return stations to normal broadcasting.

Lessons Learned

- Testing is critical to incremental improvement of our national alert and warning capabilities. These Tests prove that the EAS works and can be improved upon.
- Positive and effective outreach efforts to EAS participants in Alaska and the Virgin Islands resulted in improved communication at the Federal, Territorial, State, and local level.
- Effective public outreach successfully avoided undue public concern for the Alaska EAS Test and V.I. EAS-CAP Demonstration.
- EAS Participants are willing to cooperate in testing and improvements of the EAS.
  - i.e. ABA preparation of participants, EAS workshop
- Procedures and rules at the Federal, Territorial, State, and local levels require additional updating. There are broad technical implementation issues associated with the interpretation of FCC Part 11.
- EAS Participants require additional training and guidance on EAS device installation, configuration, monitoring, and operation.
  - EAS Handbook, Workshops, Bulletins, Industry blogs/best practices

Next Steps

- Support FCC's EAS rulemaking process
- Emphasize the need for EAS Participants to review monitoring assignments
- Increase training and technical exchange efforts:
  - Continue cooperation with FCC on technical updates
  - Continue training and exercises at the Federal level
  - Work with EAS manufacturers to promote understanding of the rules
  - Develop a cable-TV and DTV experimental sandbox at JITC IPAWS Lab
- Plan and host an EAS Workshop at NAB and promote technical "best practices."
- Continue follow-up EAS-CAP Demonstrations in Alaska and the U.S. Virgin Islands.
- Implement extensive EAS education and engagement activities as well as public awareness campaigns to support the National EAS Test.
- Continue operational planning for the Phase III, National EAS Test.

Public Comments Sample

- “The EAS hit the radio at 10:00 sharp. It was roughly 1.5 minutes later the TV warning sounded. Worked flawlessly. I wonder how many "general public" answered this questionnaire? Emphasize the need for participants to review monitoring assignments.”

- “Worked great for me. No visible test notification, hearing impaired may not have known. Is verbal test notification closed captioned for those who rely on it?”

- “Once the alarm sounded, there was TOO much dead time before telling us what the alarm was about. if it was a real alarm, people would be panicing-calling 911 instead of hearing what the alarm was about!!!! the initial alarm could have been a bit louder - to get people's attention, if i wasnt waiting for it, i may not have even noticed it, especially since there was soooo much dead time before telling me what it was about!!!”

- “This audio AND video cut in and out SO BADLY DURING THE ENTIRE TEST, THAT I COULD NOT UNDERSTAND WHAT THE MESSAGE WAS STATING! Had this been a real emergency, I would have been of zero use to me.”

- “Heard test on Juneau KXXX and FM 106. Did not hear test on KXXX or NAWAS. Test was over by time I tuned to KXXX.”

Contact Information

IPAWS Website - http://www.fema.gov/emergency/ipaws

EAS Test Questions-Discussions:

Manny Centeno
Manuel.Centeno1@dhs.gov
Office (202) 646-4328
Program Manager, Integrated Public Alert and Warning System, DHS FEMA

Damon Penn
Damon.Penn@dhs.gov
Office (202) 646-4145
Assistant Administrator, National Continuity Programs, DHS FEMA

Antwane Johnson
Antwane.Johnson@dhs.gov
Office: (202) 646-4383
Director, Integrated Public Alert and Warning System Division, DHS FEMA

Wade Witmer
Wade.Witmer@dhs.gov
Office: (202) 646-2523
Deputy Director, Integrated Public Alert and Warning System, Division, DHS FEMA